ABSTRACT OF THE DISCLOSURE

A method and apparatus are provided for low latency loss-free burst switching. Burst schedules are initiated by controllers of bufferless core nodes and distributed to respective edge nodes. In a composite-star network, the burst schedules are initiated by any of a plurality of bufferless core nodes and distributed to respective edge nodes. Burst formation takes place at source nodes and a burst size is determined according to an allocated bitrate of a burst stream to which the burst belongs. An allocated bitrate of a burst stream may be modified according to observed usage of scheduled bursts of a burst stream. A method of control-burst exchange between each of a plurality of edge nodes and each of a plurality of bufferless core nodes enables burst scheduling, time coordination, and loss-free burst switching. Both the payload bursts and control bursts are carried by optical channels connecting the edge nodes and the core nodes. A method and a circuit are provided for generating burst descriptors wherein each burst is associated with a burst stream and each burst stream is allocated a service bitrate. The generated burst descriptors are used in each master controller in each core node to create the burst schedules. In a conventional burst-scheduling process, the burst queues at a master controller of an optical switch receives burst descriptors from the source nodes and schedules the burst switching times. In a distinct departure, according to the present invention, the burst descriptors are generated by a master controller of an optical switch in a core node, the switching times of the corresponding bursts are scheduled, and the schedules are distributed to the respective edge nodes. The burst-descriptor generation is based on burst-stream bitrate-allocation defined by the source nodes.